

CLAIMS

What is claimed is:

1. An isolated polynucleotide comprising a nucleotide sequence selected from the group consisting of:

(a) a nucleotide sequence of at least 81 nucleotides selected from the group consisting of SEQ ID NOs:1, 3, 5, 7, 9, 11, 13, 15, 17, and 19;

(b) a nucleotide sequence encoding a polypeptide of at least 27 amino acids that has at least 80% identity based on the Clustal method of alignment when compared to a polypeptide selected from the group consisting of SEQ ID NOs:2, 4, 6, 8, 10, 12, 14, 16, 18, and 20; and

(c) a nucleotide sequence comprising a complement of (a) or (b).

2. The isolated polynucleotide of Claim 1 wherein the nucleotide sequence of the fragment encodes a mature protein.

3. The isolated polynucleotide of Claim 1 wherein the nucleotide sequences are DNA.

4. The isolated polynucleotide of Claim 1 wherein the nucleotide sequences are RNA.

5. A chimeric gene comprising the isolated polynucleotide of Claim 1 operably linked to at least one suitable regulatory sequence.

6. A host cell comprising the chimeric gene of Claim 5.

7. A host cell comprising the isolated polynucleotide of Claim 1.

8. The host cell of Claim 7 wherein the host cell is selected from the group consisting of yeast, bacteria, plant, mammal and insect.

9. A virus comprising the isolated polynucleotide of Claim 1.

10. A polypeptide of at least 27 amino acids that has at least 80% identity based on the Clustal method of alignment when compared to a polypeptide selected from the group consisting of SEQ ID NOs:2, 4, 6, 8, 10, 12, 14, 16, 18, and 20.

11. A method of obtaining a nucleic acid fragment encoding a K-channel agonist polypeptide comprising the steps of:

(a) synthesizing an oligonucleotide primer comprising a nucleotide sequence of at least one of 30 contiguous nucleotides derived from a nucleotide sequence selected from the group consisting of SEQ ID NOs:1, 3, 5, 7, 9, 11, 13, 15, 17, and 19 and a complement of such nucleotide sequences; and

(b) amplifying a nucleic acid sequence using the oligonucleotide primer.

12. A method of obtaining a nucleic acid fragment encoding a K-channel agonist polypeptide comprising the steps of:

(a) probing a cDNA or genomic library with an isolated polynucleotide comprising at least one of 30 contiguous nucleotides derived from a nucleotide sequence

selected from the group consisting of SEQ ID NOs:1, 3, 5, 7, 9, 11, 13, 15, 17, and 19 and a complement of such nucleotide sequences;

(b) identifying a DNA clone that hybridizes with the isolated polynucleotide;

(c) isolating the identified DNA clone; and

(d) sequencing a cDNA or genomic fragment that comprises the isolated DNA clone.

13. A composition comprising the isolated polynucleotide of Claim 1.

14. A composition comprising the isolated polypeptide of Claim 10.

15. The isolated polynucleotide of Claim 1 comprising a nucleotide sequence having at least one of 30 contiguous nucleotides.

16. A recombinant baculovirus expression vector comprising a DNA sequence encoding a polypeptide of at least 27 amino acids comprising an amino acid sequence selected from the group consisting of SEQ ID NOs:2, 4, 6, 8, 10, 12, 14, 16, 18, and 20.

17. A method for testing the activity of a K⁺-channel agonist against insects comprising the steps of:

(a) amplifying a nucleic acid sequence;

(b) using restriction enzyme analysis to confirm an appropriate nucleic acid fragment is present;

(c) isolating the nucleic acid fragment;

(d) propagating colonies containing the isolated nucleic acid fragment;

(e) co-transfecting the isolated nucleic acid fragment into host cells with linearized polyhedrin-negative baculovirus;

(f) feeding larvae a viral-contaminated diet; and

(g) comparing a reaction of a viral-contaminated larvae to a reaction of a non-viral contaminated larvae control group.